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ABSTRACT

An attempt was made to determine what factors are important in a person's decision to engage in regular, vigorous activity. An Exercise Behavior Model was developed for the purpose of explaining exercise behavior. The model assumes that a person has four major predispositions or inclinations, which influence a readiness to exercise: (1) locus of control (perceiving one's actions to be internal or influenced by external forces); (2) attitude toward physical activities; (3) individual self concept, and (4) physical fitness, appearance, and health values. Adult women who were students in a university evening course were the subjects of the study. The following findings are reported: (1) The more favorable a person's attitude toward physical activity, the more she exercised; (2) If a person expressed the belief that change factors such as luck or fate controlled her exercise behavior, the lower her exercise score; (3) For younger women, the more negative attitudes toward physical activity and perceived barriers to exercise (lack of time, children, etc.), the lower her exercise score; and (4) For older women, attitudes toward physical activities and chance beliefs on the Exercise Locus of Control Measure were the best predictors of exercise behavior. (JD)

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The Efficacy of a New Model to
Explain Exercise Behavior

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My topic today deals with exercise behavior. Probably everyone in this room realizes that exercise has tremendous health benefits--prevention of C-V disease, weight control, relief of stress, and I could go on and on. As health educators, we often tell people about the health benefits of exercise. Does the knowledge that exercise is good for them make people exercise? Sometimes....but not always. Often we will tell people about the health benefits of exercise and they just go home and sit in front of the TV and drink beer and watch other people exercise. Unfortunately, knowledge is not always enough to get people to exercise. If knowledge is not enough, then we might ask ourselves, "What factors are important in a person's decision to engage in regular, vigorous activity?"

Research in this area has identified a number of factors which may be important in a person's decision to exercise but little effort has been made to develop a conceptual framework for explaining exercise behavior. So, today, I am proposing the Exercise Behavior Model (see Table 1). The purpose of the Model is to explain exercise behavior. The Exercise Behavior Model stems from concepts associated with the Health Belief Model and other relevant research.

The Exercise Behavior Model assumes that a person has four major predispositions, or inclinations, which influence a readiness to exercise.

The first major predisposition is perceived control (or lack of control) over exercise behavior (I am calling this exercise locus of control). This construct is a more specific form of Rotter's locus of control theory. Exercise locus of control theory says that a person who believes that one's own exercise behavior is largely within one's control is described as being

internal for exercise. The person who believes that exercise behavior is out of one's own control is described as being external for exercise. An example of someone who is external would be the person who believed that his/her exercise behavior was due to luck, chance, powerful others, or environment.

A second major predisposition incorporated in the Exercise Behavior Model is attitude toward physical activity. The assumption is made that persons have either a generally favorable or unfavorable attitude toward physical activity and that attitude may affect their readiness to exercise.

A third predisposition incorporated in the Model is perception of self or self-concept.

Also incorporated in the Model as predispositions are physical fitness value, physical appearance value, and health value.

In general, if a person is internal for exercise; has a positive attitude toward physical activity; possesses a positive self concept; and has positive health, physical appearance, and physical fitness values; then, according to the Model, the person is described as ready to exercise.

Factors in the Model which may modify the readiness to exercise are general factors and cues to action. General factors include demographic variables such as age and sex as well as structural variables such as prior experience with exercise or knowledge about exercise. Cues to action are events which stimulate a person to act. Examples of cues to action are advice from others, exposure to others who exercise, and health problems.

Finally, a person may be more likely to exercise if he/she believes that there are benefits to exercise and a person may be less likely to exercise if they perceive some barrier to exercise. This would be things like lack of time, pain, cost and so on.

PURPOSE

Today I am reporting on two investigations of the efficacy of the Exercise Behavior Model. Both studies attempted to determine the relationship between the participation of adult women in regular, vigorous exercise and several variables in the Exercise Behavior Model. These variables are exercise locus of control, attitudes toward physical activity, and health, physical appearance, and physical fitness values. Another variable which was included only in the second study was perceived barriers to exercise, or things the women reported as keeping them from exercising.

PROCEDURES

Table 2 describes the people involved in the study. The participants in Study One were 64 women who ranged in age from 25 to over 55 years and who were students in a university evening class program. The participants in Study Two were 215 women who ranged in age from 25 to 65 years and who were members of 19 similar women's clubs.

The instruments that were employed are shown in Table 3. The Exercise Behavior Inventory asked for exercise behaviors done in leisure time over the past 30 days. A total score for exercise behavior was obtained which included an estimate of the frequency, duration and intensity of the exercise.

The Exercise Locus of Control Measure contained four scales: Internality, Chance, Powerful Others, and Environment.

The other instruments that were utilized were an Attitude toward Physical Activity Scale, a value survey adapted from Rokeach, and a Perceived Barriers Instrument used to assess what factors the women perceived as keeping them from exercising (This included factors such as lack of time,

lack of family support, etc.)

RESULTS

Table 4 shows the correlations between the independent variables and exercise behavior in both Study One and Study Two.

In Study One, attitude toward physical activity and environment beliefs were significantly related to exercise behavior. The more favorable a person's attitude toward physical activity, the higher the exercise score tended to be. And, the more a person expressed a belief that the environment controlled her exercise behavior, the lower her exercise score tended to be.

In Study Two, for the younger women, there were a number of variables that were significantly related to exercise behavior. The most important seemed to be attitude toward physical activity.

In Study Two, for the older women, the variables that were most strongly related to exercise behavior were, again, attitude toward physical activity and chance beliefs on the Exercise Locus of Control Measure.

If a person expressed the belief that chance factors such as luck or fate controlled her exercise behavior, the lower her exercise score tended to be.

Multiple regression analyses were also performed in both studies. These analyses yielded results similar to the results just mentioned.

In Study One, a multiple regression analysis yielded a significant multiple correlation of .45 (see Table 5). The strongest predictors of exercise behavior were attitudes toward physical activity and environment beliefs on the Exercise Locus of Control Scale.

In Study Two, hierarchical multiple regression analyses were utilized in which the independent variables were entered into the analysis in sets. The sets were determined by the order in which the variables appeared in the Model.

For the younger women, attitude toward physical activity and perceived barriers to exercise were the best predictors of exercise behavior (see Table 6). A multiple correlation of .41 was found.

For the older women, attitudes toward physical activity and chance beliefs on the Exercise locus of Control measure were the best predictors of exercise behavior (see Table 6). A significant correlation multiple of .62 was found.

In summary, the variables that were the most important in predicting exercise behavior in Study One were attitudes toward physical activity and environment beliefs on the Exercise locus of Control Scale.

For 25 to 45 year-old women in Study Two, the best predictors of exercise behavior were attitudes toward physical activity and perceived barriers to exercise. For 46-to 65- year old women in Study Two, the best predictors of exercise behavior were attitudes toward physical activity and chance beliefs on the Exercise locus of Control Scale.

It was expected that the older women would have exercised less than the younger women. This did not turn out to be the case. The mean exercise score for the older women was actually higher than the mean exercise score for the younger women (although the difference between the two age groups was not significant). Lower exercise scores for the younger women were probably related to the fact that the younger women reported more barriers to exercise than the older women. The barriers that were reported most frequently by the younger women were family responsibilities and lack of time available. And in fact, the younger women actually did have significantly more persons living in their household than did the older women.

In conclusion, when the results of both studies are viewed, the Exercise Behavior Model appears to be somewhat useful in explaining the exercise behavior of these groups of adult women.

Although caution must be used in generalizing the results of these studies, some recommendations can be made.

For women similar to the women studied here, health education programs may want to attempt to change attitudes toward physical activity. It may also be important to help women to think of ways of exercising that are not dependent on the weather or perhaps to develop alternative exercise patterns for bad weather conditions. For younger women, an attempt should be made to identify barriers to exercise and then eliminate or reduce the barriers. Particular attention should be given to time management. Older women may believe that exercise behavior is due to chance or luck so we should either attempt to change this belief or somehow work within this belief in designing exercise programs.

TABLE 1

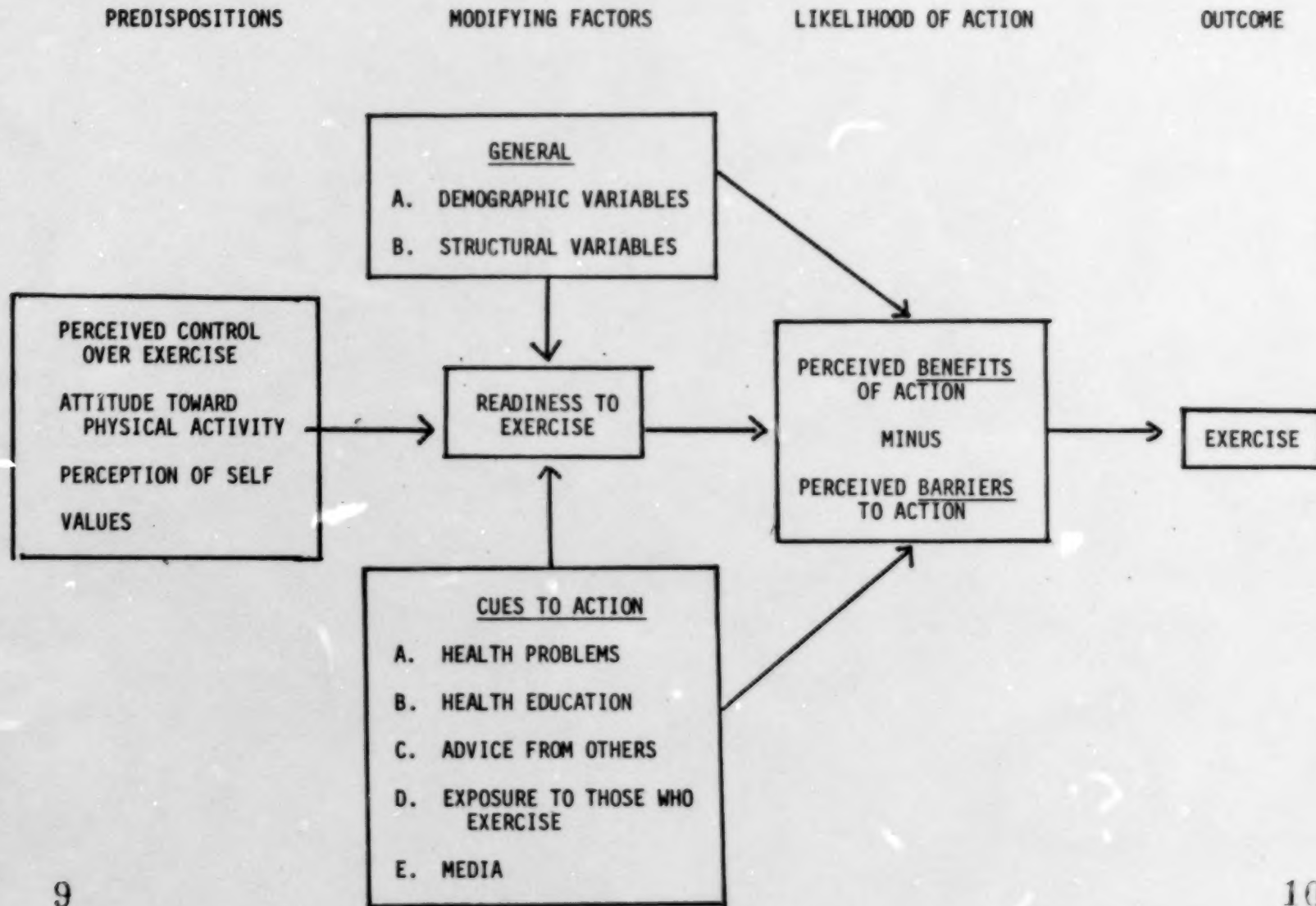
EXERCISE BEHAVIOR MODEL

TABLE 2

PARTICIPANTS

STUDY ONE

WOMEN (N=64)

AGE 25 TO OVER 55 YEARS
(86% were less than 45 years old)

STUDENTS IN A UNIVERSITY EVENING CLASS PROGRAM

STUDY TWO

WOMEN (N=215)

AGE 25 TO 65 YEARS
(25 to 45 years, n=140; 46 to 65 years, n=75)

MEMBERS OF SIMILAR WOMEN'S CLUBS

TABLE 3

INSTRUMENTS

MEASURE OF DEPENDENT VARIABLE:

EXERCISE BEHAVIOR INVENTORY

MEASURES OF INDEPENDENT VARIABLES:

EXERCISE LOCUS OF CONTROL SCALE

ATTITUDE TOWARD PHYSICAL ACTIVITY SCALE

VALUE SURVEY

PERCEIVED BARRIERS INSTRUMENT (STUDY TWO ONLY)

VALIDATION MEASURE:

MULTIDIMENSIONAL LOCUS OF CONTROL SCALE (STUDY ONE ONLY)

TABLE 4
CORRELATIONS BETWEEN INDEPENDENT VARIABLES
AND EXERCISE BEHAVIOR

INDEPENDENT VARIABLE	EXERCISE BEHAVIOR		
	STUDY 1	STUDY 2	
	AGE 25 AND OLDER	AGE 25 TO 45	AGE 46 TO 65
ATTITUDE TOWARD PHYSICAL ACTIVITY	.31 ^B	.40 ^A	.55 ^A
EXERCISE LOCUS OF CONTROL			
CHANCE	.01	-.04	-.47 ^A
POWERFUL OTHERS	-.19	-.15	-.31 ^A
ENVIRONMENT	-.33 ^B	-.10	-.23
INTERNAL	.16	.04	.28 ^B
VALUES			
HEALTH	.11	-.23 ^A	.09
PHYSICAL APPEARANCE	-.03	.14	.04
PHYSICAL FITNESS	-.13	-.28 ^A	-.29
PERCEIVED BARRIERS TO EXERCISE		-.24 ^A	-.16

^A SIGNIFICANT AT THE .01 LEVEL.

^B SIGNIFICANT AT THE .05 LEVEL.

TABLE 5
PREDICTION OF EXERCISE BEHAVIOR
(STUDY ONE)
(N = 64)

VARIABLE	B ^A	B	T	R
ATTITUDE	192.58	.288	1.85	
EXERCISE LOCUS OF CONTROL				
CHANCE	463.42	.190	1.34	
POWERFUL OTHERS	-180.89	-.091	-0.67	
ENVIRONMENT	-560.89	-.245	-1.91	.451 ^B
INTERNAL	330.65	.124	0.90	
PHYSICAL FITNESS VALUE	112.96	.055	0.35	

^A INTERCEPT = -9522.37 (OR STANDARDIZED = -1.902)

^B SIGNIFICANT AT THE .05 LEVEL.

TABLE 6
PREDICTION OF EXERCISE BEHAVIOR
(STUDY TWO)
(N = 209)

INDEPENDENT VARIABLES	AGE 25 TO 45			
	B	R	R ²	INC. IN R ²
<u>SET 1</u>				
ATTITUDE TOWARD PHYSICAL ACTIVITY	.335	.369	.137	.137 ^A
CHANCE	.080	.372	.138	.002
ENVIRONMENT	.041	.374	.140	.001
POWERFUL OTHERS	-.041	.376	.141	.002
INTERNAL	-.045	.378	.143	.001
FITNESS	-.033	.379	.144	.001
<u>SET 2</u>				
PERCEIVED BARRIERS	-.192	.413	.171	.027 ^A

^ASIGNIFICANT AT THE .01 LEVEL.

TABLE 6, CONT'D.

TABLE 6
 PREDICTION OF EXERCISE BEHAVIOR
 (STUDY TWO)
 (N = 209)

INDEPENDENT VARIABLES	AGE 46 TO 65			
	B	R	R ²	INC. IN R ²
<u>SET 1</u>				
ATTITUDE TOWARD PHYSICAL ACTIVITY	.352	.546	.298	.298 ^A
CHANCE	-.249	.600	.360	.062 ^A
ENVIRONMENT	-.024	.603	.364	.004
POWERFUL OTHERS	-.097	.606	.367	.003
INTERNAL	.073	.608	.370	.003
FITNESS	-.092	.613	.376	.006
<u>SET 2</u>				
PERCEIVED BARRIERS	.070	.617	.380	.004

^ASIGNIFICANT AT THE .01 LEVEL.

References

- Albinson, J.C. Life styles of physically active and physically inactive college males. International Journal of Sport Psychology, 1974, 5, 93-101.
- Ardall, D.B. High level wellness [:] An alternative to doctors, drugs and disease. Emmaus, Pa.: Rodale Press, 1977.
- Barnett, V., & Lewis T. Outliers in statistical data. Chichester: John Wiley and Sons, 1978.
- Becker, M.B. The Health Belief Model and sick role behavior. In M.H. Becker (Ed.), The Health Belief Model and Personal Health Behavior. Thorofare, N.J.: Charles B. Slack, 1974.
- Becker, M.H., Drachman, R.H., & Kirscht, J.P. A new approach to explaining sick-role behavior in low-income populations. American Journal of Public Health, 1974, 64, 205-216.
- Clarke, H.H. (Ed.). Health practices and physical health status. Physical Fitness Research Digest. Washington D.C. President's Council on Physical Fitness and Sports, April, 1976.
- Cohen, J., & Cohen, P. Applied multiple regression/correlation analysis for the behavioral sciences. New York: John Wiley and Sons, 1975.
- Cunningham, D.A., Montoye, H.J., Metzner, H.L., & Keller, J.B. Active leisure time activities as related to age among males in a total population. Journal of Gerontology, 1968, 23, 551-556.
- Harris, D.V. Physical activity history and attitudes of middle-aged men. Medicine and Science in Sports, 1970, 2, 203-208.
- Haskell, W.L., & Fox S.M. Physical activity in the prevention and therapy of cardiovascular disease. In W.R. Johnson & E.R. Buskirk (Eds.), Science and Medicine of Exercise and Sport (2nd ed.). New York: Harper and Row, 1974.
- Kaplan, G.D., & Cowles, A. Health locus of control and health value in the prediction of smoking reduction. Health Education Monographs, 1978, 6, 129-137.
- Keith, J.A., Spurgeon, J.H., Blair, S.N., & Carter, L.W. Motivational differentials among physically active and inactive mature males as measured by the Motivational Analysis Test. Research Quarterly, 1974, 45, 217-223.

- Layman, E.M. Contributions of exercise and sports to mental health and social adjustment. In W.R. Johnson & E.R. Buskirk (Eds.), Science and Medicine of Exercise and Sport (2nd ed.). New York: Harper and Row, 1974.
- Neale, D.C., Sonstroem, R.J., & Metz, K.F. Physical fitness, self-esteem, and attitudes toward physical activity. Research Quarterly, 1969, 40, 743-749.
- Noland, M.P., & Feldman, R.H.L. The efficacy of a new model to explain leisure exercise behavior. Unpublished manuscript, 1981.
- Rokeach, M. The nature of human values. New York: Free Press, 1973.
- Rosenstock, I.M. Historical origins of the Health Belief Model. In M.H. Becker (Ed.), The Health Belief Model and Personal Health Behavior. Thorofare, N.J.: Charles B. Slack, 1974.
- Rotter, J.B. Generalized expectancies for internal versus external control of reinforcement. Psychological Monographs, 1966, 80, (1, whole No. 609).
- Rotter, J.B. Some problems and misconceptions related to the construct of internal versus external control of reinforcement. Journal of Consulting and Clinical Psychology, 1975, 43, 56-67.
- Ruffer, W.A. A study of extreme physical activity groups of young men. Research Quarterly, 1965, 36, 183-196.
- Saltzer, E.B. Locus of control and the intention to lose weight. Health Education Monographs, 1978, 6, 118-128.
- Sonstroem, R.J. Physical estimation and attraction scales: Rationale and research. Medicine and Science in Sports, 1978, 10, 97-102.
- Taylor, H.L., Jacobs, D.R., Schucker, B., Knudsen, J., Leon, A.S., & Debacker, G. A questionnaire for the assessment of leisure time physical activities. Journal of Chronic Diseases, 1978, 31, 741-755.
- Wallston, B.S., Wallston, K.A., Kaplan, G.D., & Maides, S.A. Development and validation of the Health Locus of Control (HLC) Scale. Journal of Consulting and Clinical Psychology, 1976, 44, 580-585.
- Wallston, B.S., & Wallston, K.A. Locus of control and health: A review of the literature. Health Education Monographs, 1978, 6, 107-117.
- Young, R.J., & Ismail, A.H. Comparison of selected physiological and personality variables in regular and nonregular adult male exercisers. Research Quarterly, 1977, 48, 617-622.